

TEACHING ENGLISH TECHNICAL TERMINOLOGY

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ABSTRACT

The article tackles the issue of teaching technical terminology at a Bulgarian Vocational School. The focus is on the comparative analysis of specific terminology in the engine field in English and Bulgarian language. The text deals with the types of explanation and definition of technical terminology and provides the synonyms and translation equivalents.

Key words: English for specific purposes, technical terminology, translation, internal combustion engines

1. INTRODUCTION

An issue connected to teaching technical terminology in a foreign language may seem boring and/or challenging for foreign language teachers, learners and professionals in the particular field. Our main reason for focusing on it is the difficulties which teachers experience when they have to teach English for Specific Purposes. For an English teacher who has to teach technical English in the field of internal combustion engines and car's mechanism this is more than a challenge since they are not supposed to be professional in such an area of study, neither in Bulgarian nor in the English language. Thus, investigation in this area has acquainted us with the theoretical and practical aspects of teaching English technical terminology and broadened our competencies in this area. Another stimulus to embark on such an investigation is the fact that in Bulgaria there are too few studies and hardly any research in the field of technical terminology for internal combustion engines. There is a lack of new editions containing innovations as well as terminology.

The main goals of our article are:

- to make a comparative analysis of specific terminology in the engine field in English and the Bulgarian language. We have focused on the different types of explanation, definition and technical terminology in this area;
- to compare the technical terms in both languages and to point out their synonyms and translation equivalents;
- to compare and discuss the parts of speech in the technical terminology in English and Bulgarian language.

Eight examples in the field of internal combustion engines in English and Bulgarian language have been excerpted and analyzed. Three books have been used for this comparative analysis: "Diesel Engines-Careers principles service – 1990"; "Introduction to Engine Repair – Study Guide-2007" and "Учебник за професионални гимназии „Двигатели с вътрешно горене“- 1987" (Textbook for Vocational High Schools 'Internal Combustion Engines' 1987). The reason to choose them is that there are not any published textbooks in English for Bulgarian Vocational High schools. Every teacher has to search themselves which textbook is the most appropriate one for their classes. "Учебник за професионални гимназии „Двигатели с вътрешно горене“- 1987" (Textbook for Vocational High Schools 'Internal Combustion Engines' 1987) is the textbook that is used in the Bulgarian classroom for the subject "Internal Combustion Engines".

It is well-known that English teachers for Specific Purposes (ESP) share a lot in common with teachers of English as a Second Language (ESL). For both it is necessary to consider linguistic development and teaching theories; to have information in contemporary technology regarding their own position and role as well as the position and role of foreign language learners in education; to improve their methodology using the new technologies. In contrast to teachers of ESL, the teachers of ESP must understand and use the requirements of other professions. ESP teaching presumes teaching English as a foreign language regarding a specific profession, subject or purpose (Milevica Bojovic, Teaching Foreign Language for Specific Purposes: Teacher Development, p. 487). Some authors (Dudley- Evans and St John, 1998) use the term 'practitioner' rather than 'teacher' to emphasize that ESP work involves much more than teaching. The role of the teacher is multi-faceted in the ESP. The ESP practitioner interacts continuously with requirements of the students in different professional areas (Stephen van Vlack, English for Specific Purposes, p. 1, Sookmyung Women's University, 2009).

The specialty 'Motor Transport Equipment' is one of the specialties provided by the Blagoevgrad Vocational School. During the four years of training the students acquire knowledge and skills in the field of automobile transport in a number of areas: from safety and maintenance to diagnosis, documentation, technical drawing operation and application of the machine elements. Within the last year of the training (12th grade) the curriculum provides the subject "Foreign language for special purposes". This includes terminology in the field of the internal combustion engines, automobiles and transport equipment in English.

It might be pointed out that the students have two English classes a week. Some of them have strong positive motivation, others learn the language in order to get good marks. The students, as a whole, have a positive attitude to English as a school subject. They are interested in the English language because it helps them to find useful information in the Internet. Also, they are aware of the fact that they will need English in their future occupation. With huge interest and enthusiasm they work on presentations in English related to the history and development of famous automobile brands.

2. A COMPARATIVE ANALYSIS OF THE TERMS FROM TWO ENGLISH AND ONE BULGARIAN BOOKS

The three books used for the investigation and analysis have been listed above. What must be taken into consideration is the year of their publication. The oldest is the Bulgarian one - 1987, three years after it, the first English one is published - 1990 and the newest textbook is the second English one - 2007. Thus, one might suggest that in Bulgaria

there is a lack of new editions containing innovations as well as terminology in this field. However, these facts do not prevent a linguistic analysis of the texts from translation perspective. We have focused on the different technical terms and their synonyms and equivalents in the field of Internal Combustion Engines and their use in English and Bulgarian.

It is appropriate to start with the definition of the four-stroke cycle engine.

The first English text reads:

'In the four-stroke cycle gasoline engine, four events (or strokes) occur' (*Diesel Engines-Careers principles service – 1990, p.20*).

In this English text there are:

6 Nouns	1 Verb	2 Numerals	2 Prepositions	1 Articles
stroke cycle gasoline engine events stroke	occur	four four	in or	the

The second English text reads:

'A stroke is one movement of the piston either down from Top Dead Center (TDC) to Bottom Dead Center (BDC), or up from BDC to TDC. The term "stroke" also refers to the physical distance between these two points. One stroke of the piston moves the crankshaft through one-half of a revolution' (*Introduction to Engine Repair – Study Guide-2007, p.3*).

In this text there are:

16 Nouns	3 Verbs	4 Adjectives	4 Numerals	11 Prepositions	2 Conjunctions	5 Articles
stroke movement piston top centre bottom centre term stroke distance points stroke piston crankshaft revolution half	is refers moves	physical these dead dead	one two one one	of down from to up from to between of through of	either...or also	a the the the a

The Bulgarian text reads:

„Четиритактов двигател наричаме този, в който работния цикъл се извършва за четири хода на буталото“ (*„Двигатели с вътрешно горене“ р. 13*).

There are:

4 Nouns	2 Verbs	2 Adjectives	2 Pronouns	3 Prepositions	1 Numeral	1 Particle
двигател цикъл хода буталото	наричаме извършва	четиритактов работният	този – (demonstrative pronoun) който – (relative pronoun)	в за на	четири	се

In the first English text two words "events" and "stroke" are used as synonyms.

In the second English text only the word "stroke" is used. Its explanation is: one movement of the piston. In this text two other specific terms "Top Dead Center" and "Bottom Dead Center" are included. Top Dead Center is a dead point of which the piston is the closest to the cylinder head, i.e., when it is the farthest from the crankshaft. Bottom Dead Center is a dead point of which the piston is the closest to the crankshaft.

In the third text, the Bulgarian one, the term "working cycle" is included. This is a set of processes that occur in the cylinder of the internal combustion engine. The number of strokes determines the types of engines: four-stroke cycle or two-stroke cycle. The word "piston" is used in the second and in the third text. In English and in Bulgarian there is only one word "piston" and „бутало“. There are not any synonyms of "piston" and „бутало“ in English and Bulgarian. The term "piston" stands for a cylindrical engine component that slides back and forth in the cylinder bore by forces produced during the combustion process (http://courses.washington.edu/engr100/Section_Wei/engine/UofWindsorManual/Piston%20and%20Piston%20Rings.htm).

In English the synonym of the word "engine" is "motor". In Bulgarian language there are also two words: "двигател" and „мотор“. But in the two languages the most frequently used is the word "engine" („двигател“).

The first and the third text give definition of the four-stroke engine while the second text explains the term-stroke (it gives definition of the term *stroke*). The information in the second text is more detailed. The common feature in the three texts is that they are a part of scientific literature concerning the four stroke engine field. It is typical of the scientific literature to use the present simple tense, passive voice; specific terms; the domination of iterations because of the requirement for accuracy and clarity of the scientific text.

The next examples provide comparison between the explanations concerning the second stroke - compression stroke.

The first English text is:
 'On the next stroke - or compression stroke - the piston moves up, increasing the pressure on the fuel-air mixture. Both intake and exhaust valves are now closed' (*Diesel Engines-Careers principles service – 1990, p. 20*).

There are:

11 Nouns	4 Verbs	1 Adjectives	2 Adverbs	3 Conjunctions	2 Prepositions	4 Articles
stroke compression stroke piston pressure fuel air mixture intake exhaust valves	moves increasing are closed	next	up now	or both and	on on	the the the the

The second English text is:
 'After the piston passes BDC, the compression stroke begins. The intake valve closes and the mixture in the cylinder is compressed by the piston as it moves upward again to TDC. The intake and exhaust valves are both closed during this stroke, so the pressure and temperature of the air-fuel mixture rises' (*Introduction to Engine Repair – Study Guide-2007, p. 4*).

There are:

22 Nouns	8 Verbs	1 Past participle	2 Adjectives	2 Adverbs	5 Conjunctions	6 Prepositions	3 Pronouns	9 Articles
piston (BDC) bottom center compression stroke intake valve mixture cylinder piston (TDC) top center intake exhaust valves stroke pressure temperature air fuel mixture bottom	passes begins closes is moves are closed rises	compressed	dead dead	upward again	and as and so and	after in by to during of	It both this	the the the the the the the the

The Bulgarian text reads:

"През втория такт сгъстяване, който протича при движение на буталото от ДМТ (долна мъртва точка) към ГМТ (горна мъртва точка) и при затворени клапани, се извършва сгъстяване на работната смес, съпроводено с повишаване на нейното налягане и температура" (*учебник за професионални гимназии „Двигатели с вътрешно горене“-1987, p. 13*).

There are:

12 Nouns	2 Verbs	5 Adjectives	9 Prepositions	2 Conjunctions	2 Pronouns	1 Numeral	1 Particle	1 Participle
такт сгъстяване движение буталото точка точка клапани сгъстяване смес повишаване налягане температура	Протича извършва	долна, мъртва, горна, затворени, работната	през при на от към при на с на	и и	който нейното	втория	се	съпроводено

The term "air-fuel mixture" is used in both English texts. In the Bulgarian text this concept is expressed with the term "работна смес". In the second English text and in the Bulgarian extract one can notice the usage of the terms "BDC" and "TDC". In the first English text this action of the piston is described as "moves up". In English the synonyms of "Bottom Dead Center" is "Lower Dead Center" and of "Top Dead Center" is "Upper Dead Center" but the most frequently used are TDC and BDC. There are not any synonyms of TDC and BDC in Bulgarian.

The first and the third text render scientific information concerning the second stroke wherein the pressure is increased and the air-fuel mixture is compressed. The second text gives the scientific explanation of the action of the piston and valves which is to compress the mixture in the cylinder. In the English texts the passive voice and the present simple tense are used. Technical terms dominate in the three passages.

The texts which give definitions are shorter than the explanatory texts. Due to the description of the principle of action, a more detailed explanation is required rather than when one gives definition of the term that names some part of the structure of the four-stroke engine.

The third stroke-power stroke is to be analyzed as well.

In the first English text its description is:

"As the piston completes its upward compression stroke, the compressed fuel –air mixture is ignited by the spark plug. The force of the combustion causes the piston to move downward with great force. Both intake and exhaust valves remain closed" (*Diesel Engines-Careers principles service – 1990, p. 20*).

There are:

15 Nouns	6 Verbs	1 Past Participle	3 Adjectives	1 Pronoun	3 Conjunctions	4 Prepositions	6 Articles	1 Adverb
piston	completes	ignited	upward	its	as and both	by of to with	the the the the the	downward
compression	compressed		great					
stroke	is		closed					
fuel	causes							
air	move							
mixture	remain							
spark								
plug								
force								
combustion								
piston								
force								
intake								
exhaust								
valves								

The second English text reads:

"As the piston nears TDC with both valves closed, the compressed air-fuel mixture is ignited. Combustion occurs, resulting in a tremendous pressure increase that pushes the piston back down the cylinder. This is the power or "working" stroke. The intake and exhaust valves remain closed" (*Introduction to Engine Repair – Study Guide-2007, p. 4*).

There are:

16 Nouns	9 Verbs	1 Past Participle	1 Adverb	2 Pronouns	5 Adjectives	2 Prepositions	3 Conjunctions	7 Articles	1 Present Participle
piston	nears	ignited	that	this	dead	with	as	the	resulting
top	closed			both	compressed	in	or	a	
center valves	is				tremendous		and	the	
air	occurs				working closed			the	
fuel mixture	increase							the	
combustion	pushes							the	
pressure	back down								
piston cylinder	(phrasal verb)								
power stroke	is								
intake exhaust	remain								
valves									

The Bulgarian text reads:

"В края на такта в ГМТ (горна мъртва точка) сместа се възпламенява от електрическа искра, прескачаща между електродите на запалителната свещ, разположена в цилиндричната глава и свързана със запалителната уредба на двигателя. Горенето протича около ГМТ, т.е. при почти постоянен обем" (*учебник за професионални гимназии „Двигатели с вътрешно горене”- 1987, p. 13*).

There are:

13 Nouns	2 Verbs	9 Adjectives	10 Prepositions	1 Particle	3 Participle forms	1 Conjunction
края	възпламенява	електрическа	в	се	прескачаща	и
такт			в			
сместа	протича	горна	от		разположена	
искра		мъртва	между			
точка			на		свързана	

електродите	запалителната	в			
свещ	цилиндровата	със			
глава	запалителната	на			
уредба		около			
двигателя	горна	при			
горенето	мъртва				
точка обем	постоянен				

The term "spark plug" is used in the first English text and in the Bulgarian text. Its synonym in Bulgarian is "искрова свещ", in English there are two: "spark plug" and "ignition plug". The spark plug is "a device inserted in the head of an internal-combustion engine cylinder that ignites the fuel mixture by means of an electric spark" (<http://www.thefreedictionary.com/spark+plug>). In the three texts one can notice the term "combustion". In English its synonym is "burning".

In Bulgarian the equivalents for combustion are: изгаряне; запалване; възпламеняване. The term "combustion" is "the process of burning", or, "a chemical change, especially oxidation, accompanied by the production of heat and light" (<http://www.thefreedictionary.com/combustion>).

The term "Top Dead Center" is used in the second English text and in the Bulgarian extract. In the first English text that term is not used but the words "upward" and "downward" describe the direction of movement of the piston to TDC and BDC.

Another technical term in the second English text is "cylinder". "The cylinders are round holes or bores machined into the block for the pistons to travel up and down in" (*Introduction to Engine Repair – Study Guide-2007 Melior, Inc. -p. 2*).

The technical term "spark plug electrode" ("електроди на запалителна свещ") is mentioned only in the Bulgarian text. This is "a device inserted in the head of an internal-combustion engine cylinder that ignites the fuel mixture by means of an electric spark" (<http://www.thefreedictionary.com/spark+plug>). In Bulgarian this term cannot be translated in any other way. But its translation equivalents in English are: "spark plug terminal" and "spark plug point". Spark plug electrode is usually used.

In all three texts the technical terms dominate. The different stages of the operation of the piston are explained. The first text explains the stroke of the piston in the compression of the air-fuel mixture. The second text expounds the reaching to the top dead center. The third extract describes the ignition of the mixture from the electric spark. The verb forms predominate because the three texts give a scientific explanation of the definite process of activation of a part of the engine. The verbs are in the present simple tense and in the passive voice according to the requirement of the scientific text.

In the next example the term 'fourth stroke' is presented and analyzed.

The first English text states:

"On the exhaust stroke, the piston begins to move upward as the exhaust valve opens. Burned gases are forced out of the combustion chamber through the exhaust valve opening" (*Diesel Engines-Careers principles service – 1990, p. 20*).

There are:

11 Nouns	4 Verbs	1 Adverb	4 Prepositions	1 Conjunction	5 Articles	2 Past Participles
exhaust stroke piston exhaust valve gases combustion chamber exhaust valve opening	begins move opens are	upward	on to out of through	as	the the the the the	burned forced

The second English text states:

"The exhaust stroke begins as the piston nears BDC. The exhaust valve opens and the piston moves upward again, pushing the burned exhaust gases out of the cylinder. The intake valve remains closed until the piston has almost reached TDC again. At this point, the engine has completed one full cycle, and the crankshaft has rotated twice. The entire process then repeats" (*Introduction to Engine Repair – Study Guide-2007, p. 4*).

21 Nouns	8 Verbs	6 Adjectives	1 Pronoun	6 Adverbs	3 Prepositions	4 Conjunctions	1 Numeral	10 Articles	1 Present Participle
exhaust stroke piston bottom center exhaust valve piston exhaust gases cylinder intake valve piston top center point engine	begins opens moves remains has completed has reached has rotated repeats	dead burned closed dead full entire	this	upward again almost again twice then	near out of at	as and until and	one	the the the the the the the the the the	pushing

cycle								
crankshaft								
process								

The Bulgarian text states:

„През четвъртия такт - изпускане, когато буталото се движи от ДМТ към ГМТ, се извършва принудително почистване на цилиндъра от отработените газове. В края на такта се отваря всмукателният и се затваря изпускателният клапан“ (учебник за професионални гимназии „Двигатели с вътрешно горене“-1987, р. 14).

There are:

11 Nouns	4 Verbs	6 Adjectives	2 Adverbs	7 Prepositions	1 Numeral	1 Conjunction	4 Particles	1 Participle
такт	движи	всмукателния	принудително	през	четвъртия	и	се	отработените
изпускане	извършва	изпускателния	когато (relative pronoun)	от			се	
буталото	отваря	долна		към			се	
точка	затваря	мъртва		на			се	
точка		горна		от				
очистване		мъртва		в				
цилиндъра				на				
газове								
края								
такта								
клапан								

In the first English text the term “combustion chamber” is used. A combustion chamber is the area in an engine where fuel is burned. Its synonyms are: combustion space; compression chamber; compression space; clearance space.

The Bulgarian synonyms of the term “камера на горене” are: горивна камера; камера на съгъстяването. Another term is “exhaust valve”. “An exhaust valve is found in the cylinder head of an internal combustion engine. When the fuel and air mixture has been ignited in the cylinder, the spent gasses are sent out of the engine through this valve” (<http://www.wisegeek.com/what-is-an-exhaust-valve.htm>). There are not any synonyms of “exhaust valve” in English and in Bulgarian. But the word “exhaust” can function as a noun and as a verb. “Exhaust” as a noun is a “system consisting of the parts of an engine through which burned gases or steam are discharged” and as a verb: “to let out or draw off” (<http://www.thefreedictionary.com>).

In the second English text one can notice the term “intake valve”. “An intake valve is the name for a valve that allows air or fluid to pass through it, typically during the intake phase of an engine's operation” (<http://www.wisegeek.org/what-is-an-intake-valve.htm>). Its synonyms are: inlet valve; admission valve; suction valve; induction valve. There are not any synonyms of “intake valve” in Bulgarian. Another specific term in the second English text is “exhaust gases” and “отработени газове” in the Bulgarian extracts. „Изгорели газове” and “газообразни продукти на горене” are synonyms in the Bulgarian terminology, while in English there are not any. In this extract the present participle “pushing” is used, which expresses an action that takes place simultaneously with another action of the piston (“the piston moves upward again, pushing the burned exhaust gases out of ...”). The Present perfect tense is used also (e.g. “the piston has almost reached TDC ...”; “At this point, the engine has completed one full cycle, and the crankshaft has rotated twice.”).

The technical terms dominate again in the three texts. The verbs express different stages of the operation of some part of the engine: begins to move, opens, moves, remains closed.

Another term to focus on is the Diesel engine - the efficiency of Diesel engines:

In the first English text one reads:

“Diesel engines are very efficient, producing more power from the fuel that is burned. This makes them more economical to operate” (*Diesel Engines-Careers principles service – 1990, p. 13*).

There are:

4 Nouns	4 Verbs	1 Past Participle	1 Present Participle	4 Adjectives	1 Adverb	3 Pronouns	2 Prepositions	1 Article
diesel	are	burned	producing	efficient	very	them	from	the
engines	is			more		this	to	
power	operate			more		that		
fuel				economical				

The second English text states:

“There is more energy contained in a gallon of diesel fuel than in a gallon of gasoline. While a gasoline engine can produce more power by weight than a diesel engine, the diesel engine runs much leaner and provides better fuel efficiency by about one-third. This has made diesel engines attractive to automobile manufacturers at times” (*Introduction to Engine Repair – Study Guide-2007, p. 5*).

There are:

21 Nouns	6 Verbs	5 Adjectives	1 Adverb	10 Prepositions	2 Conjunctions	1 Numeral	1 Pronoun	5 Articles	1 Past Participle
energy gallon diesel fuel gallon gasoline gasoline engine power weight diesel engine diesel engine leaner fuel efficiency diesel engines automobile manufactures	is can produce runs provides has made	more more much better attractive	at times	in of in than by than by about to	while and	one –third	this	a a a a the	contained

In the Bulgarian text this advantage looks as follows:

“Дизеловите двигатели имат следните предимства пред бензиновите двигатели: по-голяма икономичност поради по-голямата степен на съгъстяване” (*учебник за професионални гимназии „Двигатели с вътрешно горене”- 1987, p. 21*).

There are:

6 Nouns	1 Verb	5 Adjectives	3 Prepositions	2 Particles
двигатели предимства двигатели степен икономичност съгъстяване	имат	дизеловите следните бензиновите голяма голямата	пред на поради	по по-

The Bulgarian text explains that the diesel engines are more efficient than the gasoline engines due to the greater compression of the fuel. One can notice additional information in the second English text - “gallon” as a unit. This is “a common unit of capacity in English-speaking countries, equal to four quarts, the U.S. standard gallon being equal to 231 cubic inches (3.7853 liters), and the British imperial gallon to 277.42 cubic inches (4.546 liters)” (<http://www.thefreedictionary.com/gallon>). There is a comparison between a gallon of a Diesel engine and a gallon of a Gasoline engine. This unit is not used in Bulgarian technical literature. Usually there one can see the unit “liter”. The comparison between Diesel and Gasoline Engines is typical of these three texts.

These parts of the scientific texts provide information regarding the advantages of the diesel engine compared to the gasoline.

The second English text gives more detailed information comparing the fuel consumption of the two types of engines. One can observe the use of the comparative degree: more power, much leaner, better fuel efficiency.

The first English text and the Bulgarian text provide less information than the second English extract regarding the fuel economy of the diesel engine compared to the gasoline one. None of the three texts draws a parallel between the two types of engines.

The next examples discuss the disadvantages of Diesel Engines in the winter:

The first English text states:

„Some diesel engines are noisier than gasoline engines. The familiar ‘diesel knock’, most often heard during idling or acceleration, is objectionable to some people” (*Diesel Engines-Careers principles service – 1990, p. 13*).

There are:

8 Nouns	3 Verbs	1 Past Participle	1 Gerund	6 Adjectives	2 Conjunctions	1 determiner	2 Prepositions	1 Article
diesel engines gasoline engines engines diesel knock acceleration people	are heard is	heard	idling	some noisier familiar often objectionable some	than or	Most	during to	the

The second English text:

“Difficulty in starting diesel engines in cold weather, sluggish acceleration, smell, and noise are other factors that have prevented diesels from being widely used in automobiles, but this may change again in the future” (*Introduction to Engine Repair – Study Guide-2007, p. 6*).

There are:

11 Nouns	4 Verbs	1 Present Participle	1 Past Participle	4 Adjectives	2 Adverbs	5 Prepositions	3 Conjunctions	1 Pronoun	1 Article
difficulty diesel engines weather acceleration smell noise factors diesels automobiles future	are have prevented may change	being	used	starting cold sluggish other	widely again	in in in from in	and that but	this	the

The Bulgarian text is:

“Работят по-шумно и често при по-голямо натоварване ‘пушат’ (замърсяват околната среда със сажди в отработилите газове)” (учебник за професионални гимназии „Двигатели с вътрешно горене“-1987, p. 22).

There are:

4 Nouns	3 Verbs	3 Adjectives	1 Adverb	3 Prepositions	1 Conjunction	1 Participle part	2 Particles
натоварване среда сажди газове	работят пушат замърсяват	голямо околната шумно	често	при със в	и	отработилите	по по

The comparative degree of the adjective “noisy” is used in the first English text and in the Bulgarian text. The term “diesel knock” is contained in the first English text; in the Bulgarian text the term is „пушат“, but they do not express the same meaning. “Diesel knock” is the specific knock of the Diesel Engine that one cannot hear in the Gasoline Engines in the winter. This term is very well described in the second English text as “difficulty in starting diesel engines in cold weather”.

The three texts give information about the characteristics of the diesel engine when it works.

Another disadvantage is discussed further in the three textbooks.

The first English text states:

“In colder climates, care must be taken that the correct fuel is used with diesel engines so that the fuel will not gel during cold weather” (*Diesel Engines-Careers principles service – 1990, p. 14*).

There are:

8 Nouns	5 Verbs	3 Adjectives	3 Prepositions	2 Conjunctions	1 Adverb	2 Articles	1 Past Participle
climates care fuel diesel engines fuel gel weather	must be taken is will	colder correct cold	in with during	that so that	not	the the	used

In the Bulgarian text:

“Студеното им пускане е по-трудно, особено зимно време” (учебник за професионални гимназии „Двигатели с вътрешно горене“-1987, p. 22).

There are:

2 Nouns	1 Verbs	2 Adjectives	2 Adverbs	1 Pronoun	1 Particle
пускане време	е	студеното зимно	трудно особено	им	по

The English text explains the appropriate diesel fuel as fuel that will not gel in cold climates. It recommends the use of the diesel engine in the cold weather (“care must be taken”).

The Bulgarian text makes the inference about the difficulty of combustion of diesel engine in cold weather. It is focused on the harder work in the winter. There is not any specific terminology in both texts.

One more facet to focus on is the exhaust odour of Diesel engines as a disadvantage:

The first English text says:

“Some operators find the pungent exhaust odour of diesel engines offensive and consider it a serious disadvantage” (*Diesel Engines-Careers principles service – 1990, p. 14*).

There are:

4 Nouns	2 Verbs	5 Adjectives	1 Preposition	1 Pronoun	1 Conjunction	2 Articles
operators odor engines disadvantage	find consider	some pungent exhaust offensive serious	of	it	and	the a

The second English text says:

"High exhaust emissions of particulates (soot) and oxides of nitrogen (NOx) due to the high combustion temperatures are an obstacle" (*Introduction to Engine Repair – Study Guide-2007, p. 5*).

There are:

8 Nouns	1 Verb	3 Adjectives	3 Prepositions	1 Conjunction	2 Articles
emissions particulates soot oxides nitrogen combustion temperatures obstacle	are	high exhaust high	of of due to	and	the an

The Bulgarian text says:

"Работят по-шумно и често при по-голямо натоварване 'пушат' (замърсяват околната среда със сажди в отработилите газове)" (*учебник за професионални гимназии „Двигатели с вътрешно горене”-1987, p. 22*).

There are:

4 Nouns	3 Verbs	3 Adjectives	3 Prepositions	1 Adverb	1 Conjunction	1 Particle	1 Participle
натоварване среда сажди газовете	работят пушат замърсяват	шумно околната голямо	при със в	често	и	по	отработилите

The three texts give information in regard to the exhaust odours when the engine works. The basic information concerns the disadvantages of this odour as a result of the working of the diesel engine. These passages contain terminology from the chemical and technical fields.

In the first English text one can read terms as: operator; pungent; offensive; exhaust; odour.

The word "operator" refers to an agent that operates some apparatus or machine. The term "pungent" describes a taste or smell that gives a sharp sensation. "Odour" means "the sensation that results when olfactory receptors in the nose are stimulated by particular chemicals in gaseous form" (<http://www.vocabulary.com/dictionary/odor>).

The disadvantages of the diesel engine are expressed with the adjective "offensive". Offensive is used for unpleasant or disgusting senses.

In the second English text the chemical terminology predominates: one can notice the terms of chemistry "oxides of nitrogen". Technically the noun "emission" means anything that has been released out into the open. Its synonym is "emanation".

The next term "particulates" is "a small discrete mass of solid or liquid matter that remains individually dispersed in gas or liquid emissions (usually considered to be an atmospheric pollutant" (<http://www.vocabulary.com/dictionary/particulate>).

The definition of the term "soot" is "fine black particles, chiefly composed of carbon, produced by incomplete combustion of coal, oil, wood, or other fuels" (<http://www.thefreedictionary.com/soot>).

The next term used in the second English text is chemical. This is Oxides of nitrogen (NOx). It is formed by the reaction of nitrogen and oxygen gases in the air during combustion, especially at high temperatures. These are the acidic gases that contribute to smog formation and acid rain. In areas of high motor vehicle traffic, such as in large cities, the amount of NOx emitted into the atmosphere as "air pollution" can be significant. It must be pointed out that the symbol 'Nox' for this chemical elements is identical in English and the Bulgarian language.

In the Bulgarian text the focus is on the way of working and its result: the pollution. The noun "soot" („сажди") is used as it is used in the second English text.

The first and the second English texts are with descriptive character compared to the Bulgarian one. In the first English passage there are more adjectives than in the second English text, but the second one uses more chemical terminology.

3. CONCLUSIONS

The goals of this investigation have been to make a comparative analysis of some of the specific terminology in the engine field in English and Bulgarian language and to focus on the different types of explanation and definition of technical terminology in this area. In this study the technical terms in both languages have been compared and their synonyms and translation equivalents have been pointed out. As it has been mentioned, three books have been used for this comparative analysis, two of which are English and one - Bulgarian. Comparing the texts from the two English books one can notice that different technical terms that explain the processes and characteristics of Internal Combustion Engines are used. The number of the parts of speech varies in each definition and description in both languages. What should be emphasized is the fact that there are words with a number of synonyms in the technical terminology in English compared to Bulgarian. The accuracy and conciseness are typical of scientific and technical texts. However, this wealth of synonyms in the terminology, the definitions and the explanations that is observed in the English language differs to a great extent from the Bulgarian definitions where such richness of synonyms lacks.

Scientists seek incessantly solutions to improve the internal combustion engine, the gasoline and diesel fuels they utilize, so as not to pollute the environment, where we live. These processes and results are reflected in the textbooks in this

field of study and, consequently, in the English for specific purposes textbooks. Such innovations and the terminology connected to them require modern teachers to study continuously and enrich their knowledge in various areas in order to teach ESP. The goal of all teachers is to find appropriate methods of teaching English technical terminology in different professional fields which will help the students become good professionals.

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